

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for diagnosing programmable hardware comprising:

implementing logic functions in the programmable hardware;

detecting signals generated by the programmable hardware;

recognizing an occurrence of a user-specified event generated by the programmable hardware;

generating a signal to cease bus access, in a configurable system on a chip, upon the occurrence of the user specified event, the configurable system on a chip integrating at least a central processing unit, an internal system bus, and a ~~configurable logic~~ the programmable hardware, the signal generated by a breakpoint unit connected to the internal system bus, such that the user-specified event of the breakpoint unit can be programmed through a debug port;

allowing completion of all pending bus transactions;

stopping the system clock such that the state of the programmable hardware is held ~~static~~ in a static state; and

accessing the static state of the programmable hardware through the debug port.

2. (Previously Presented) The method of claim 1, wherein the internal system bus is a pipeline bus.

3. (Original) The method of claim 1, wherein the debug port is a bus master.

4. (Original) The method of claim 1, wherein allowing completion of all pending bus transactions includes monitoring the bus for pending bus transactions.

5. (Original) The method of claim 4, wherein allowing completion of all pending bus transactions further includes generating a qualified clock freeze cycle upon completion of all pending bus transactions.

6. (Previously Presented) The method of claim 1, wherein the user-specified event is programmed by a user.

7. (Currently Amended) A machine-readable medium that provides executable instructions, which when executed by a processor, cause said processor to perform a method for diagnosing programmable hardware comprising:

implementing logic functions in the programmable hardware;

detecting signals generated by the programmable hardware;

recognizing an occurrence of a user-specified event generated by the programmable hardware;

generating a signal to cease bus access, in a configurable system on a chip, upon the occurrence of the user-specified event, the configurable system on a chip integrating at least a central processing unit, an internal system bus, and a ~~configurable logic~~ the programmable hardware, the signal generated by a breakpoint unit connected to the internal system bus, such that the user-specified event of the breakpoint unit can be programmed through a debug port;

allowing completion of all pending bus transactions;

stopping the system clock such that the state of the programmable hardware is held ~~static~~ in a static state; and

accessing the static state of the programmable hardware through the debug port.

8. (Previously Presented) The machine-readable medium of claim 7, wherein the internal system bus is a pipeline bus.

9. (Original) The machine-readable medium of claim 7, wherein the debug port is a bus master.

10. (Original) The machine-readable medium of claim 7, wherein allowing completion of all pending bus transactions includes monitoring the bus for pending bus transactions.

11. (Original) The machine-readable medium of claim 10, wherein allowing completion of all pending bus transactions further includes generating a qualified clock freeze cycle upon completion of all pending bus transactions.

12. (Previously Presented) The machine-readable medium of claim 7, wherein the user-specified event is programmed by a user.

13. (Currently Amended) An apparatus for diagnosing programmable hardware comprising:

means to implement logic functions in the programmable hardware;

means to detect signals generated by the programmable hardware;

means to recognize an occurrence of a user-specified event generated by the programmable hardware;

a breakpoint unit to generate a signal to cease bus access, in a configurable system on a chip, upon the occurrence of the user-specified event, the configurable system on a chip integrating at least a central processing unit, an internal system bus, and ~~a configurable logic~~ the programmable hardware, the breakpoint unit connected to the internal system bus, such that the user-specified event of the breakpoint unit can be programmed through a debug port;

means to allow completion of all pending bus transactions;

means to stop the system clock such that the state of the programmable hardware is held static in a static state; and

means to access the static state of the programmable hardware through the debug port.

14. (Previously Presented) The apparatus of claim 13, wherein the internal system bus is a pipeline bus.

15. (Original) The apparatus of claim 13, wherein the debug port is a bus master.

16. (Original) The apparatus of claim 13, wherein allowing completion of all pending bus transactions includes monitoring the bus for pending bus transactions.

17. (Original) The apparatus of claim 16, wherein allowing completion of all pending bus transactions further includes generating a qualified clock freeze cycle upon completion of all pending bus transactions.

18. (Previously Presented) The apparatus of claim 13, wherein the user-specified event is programmed by a user.

19. (Previously Presented) The method of claim 6 wherein the user-specified event comprises a sequence of events.

20. (Previously Presented) The machine-readable medium of claim 16 wherein the user-specified event comprises a sequence of events.

21. (Previously Presented) The apparatus of claim 18 wherein the user-specified event comprises a sequence of events.

22. (Previously Presented) The method of claim 1 wherein the breakpoint unit is connected to a plurality of buses such that the breakpoint unit generates a signal in response to a user-specified event on any of the plurality of buses.

23. (Previously Presented) The method of claim 22 wherein the breakpoint unit is programmed to generate multiple signals upon the occurrence of a user-specified event.